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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,500	12/03/2003	Joseph F. Brooks	M4065.0957/P957	3970

24998 7590 06/15/2006

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EXAMINER
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HOANG, QUOC DINH

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/725,500

Applicant(s)

BROOKS ET AL.

Examiner

Quoc D. Hoang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 21-29 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of species I (claims 21-29) in the reply filed on 05/04/2006 is acknowledged.

### ***Drawings***

2. Figures 1A-1D and Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see [0012], [0013], [0025]-[0029]). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 21-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Applicants' Admitted Prior Art (AAPA).

**Regarding claim 21**, AAPA teaches an electrode having minimal work function variation, comprising:

a first conductive layer 102 ([0025]-[0029] and Fig. 2);

a dielectric layer 104 over said first conductive layer 102, said dielectric having an opening exposing a portion of said first conductive layer ([0025]-[0029] and Fig. 2);

an adhesion layer 110 over said dielectric layer and said exposed portion of said first conductive layer ([0025]-[0029] and Fig. 2);

a second conductive layer 112 over said adhesion layer, wherein said second conductive layer and said adhesion layer are recessed within said opening in said dielectric layer ([0025]-[0029] and Fig. 2); and

a third conductive layer 210 over said dielectric layer 104 and over said second conductive layer 112 and said adhesion layer 110 within said opening ([0025]-[0029] and Fig. 2). *Noted that the top electrode is considered to be the third conductive layer (Fig. 2).*

**Regarding claim 22**, AAPA teaches wherein said third conductive layer 210 is planarized such that a top surface of said layers is substantially level with a top surface of said dielectric layer ([0025]-[0029] and Fig. 2).

**Regarding claim 23**, AAPA teaches wherein said third conductive layer 210 is patterned ([0025]-[0029] and Fig. 2) .

**Regarding claim 24**, AAPA teaches wherein said adhesion layer 110 comprises

an oxide or a nitride ([0025] and Fig. 2).

**Regarding claim 25**, AAPA teaches wherein said adhesion layer 110 comprises titanium nitride ([0025] and Fig. 2).

**Regarding claim 26**, AAPA teaches wherein said first conductive layer 102 comprises at least one of the group consisting of tungsten, nickel, tantalum, aluminum, platinum, and conductive nitrides ([0025] and Fig. 2).

**Regarding claim 27**, AAPA teaches wherein said second conductive layer 112 comprises tungsten ([0025] and Fig. 2).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art in view of Saenger et al., (US Pat No. 5,914,851, hereinafter "Saenger").

**Regarding claim 28**, AAPA teaches the third conductive layer 210, but does not teach wherein said third conductive layer is formed from a same material as the first conductive material.

However, Saenger teaches wherein the third conductive layer 112 is formed from a same material as the first conductive material 106 (col. 4, lines 5-11 and Fig. 7). Since AAPA and Saenger are all from the same field of endeavor, the purpose disclosed by

Saenger would have been recognized in the pertinent art of AAPA. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use same conductive material of the first and third conductive layer in order to obtain a high conductivity of the electrodes.

**Regarding claim 29**, AAPA teaches the third conductive layer 210, but does not teach wherein said third conductive layer is formed from a same material as the second conductive material.

However, Saenger teaches wherein the third conductive layer 112 is formed from a same material as the second conductive material 700 (col. 5, lines 25-35 and Fig. 7). *Noted that the conductive spacer 700 is considered to be the second conductive material.* Since AAPA and Saenger are all from the same field of endeavor, the purpose disclosed by Saenger would have been recognized in the pertinent art of AAPA. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use same conductive material of the first and second conductive layer in order to obtain a high conductivity of the electrode and the conductive spacer.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8.00 AM to 5.00 PM.

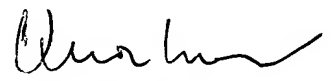
If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone numbers

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of the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quoc Hoang  
Patent examiner/AU 2818

  
01/11/2006